



State of Utah

JON M. HUNTSMAN, JR.  
Governor

GARY R. HERBERT  
Lieutenant Governor

## Department of Administrative Services

D'ARCY DIXON PIGNANELLI  
Executive Director

### Division of Facilities Construction and Management

F. KEITH STEPAN  
Director

## ADDENDUM

Date: 19 January 2006

To: Contractors

From: Jim Russell, Project Manager, DFCM

Reference: SLCC 2 Campuses Emergency Generator Improvements  
DFCM Project No. 005177670

Subject: **Addendum No. 1**

Pages	Addendum	1 page
	Revised Bid Schedule	2 pages
	Engineers Attachment	35 pages
	<u>Revised Fixture Schedule</u>	<u>1 page</u>
	<b>Total</b>	<b>39 pages</b>

The following drawings are considered part of this addendum, and are available separately on the DFCM project website;

[http://dfcm.utah.gov/project\\_center/projects\\_files/05177670public/05177670\\_online.htm](http://dfcm.utah.gov/project_center/projects_files/05177670public/05177670_online.htm)

New Drawing (sheet L1.1)	1 page
Revised Drawings (sheets E103, <u>E104, E105, E106, E-401, E601</u> )	<u>6 pages</u>
<b>Total</b>	<b>7 pages</b>

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**Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.**

1.1 Omit fugitive dust plan.

1.2 All inspection and testing fees are paid for by the DFCM.

*End of Addendum*



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

DFCM

## Division of Facilities Construction and Management

### BID FORM - REVISED

NAME OF BIDDER \_\_\_\_\_ DATE \_\_\_\_\_

To the Division of Facilities Construction and Management  
4110 State Office Building  
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Contractors" and in accordance with the Request for Bids for the **EMERGENCY GENERATOR IMPROVEMENTS – SOUTH CITY AND LARRY H. MILLER CAMPUSES – SALT LAKE COMMUNITY COLLEGE – SALT LAKE CITY, UTAH** **DFCM PROJECT NO. 05177670** and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: \_\_\_\_\_

For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

\_\_\_\_\_ DOLLARS (\$\_\_\_\_\_)

(In case of discrepancy, written amount shall govern)

#### BID BREAKDOWN

Larry H. Miller Campus	\$ _____
South City Campus	\$ _____

I/We guarantee that the Work will be Substantially Complete within **150 calendar days** after receipt of the Notice to Proceed, should I/we be the successful bidder, and agree to pay liquidated damages in the amount of **\$250.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

BID FORM  
PAGE NO. 2

This bid shall be good for 45 days after bid opening.

Enclosed is a 5% bid bond, as required, in the sum of \_\_\_\_\_

The undersigned Contractor's License Number for Utah is \_\_\_\_\_.

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within ten (10) days, unless a shorter time is specified in Contract Documents, and deliver acceptable Performance and Payment bonds in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract. The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Division of Facilities Construction and Management as liquidated damages for delay and additional expense caused thereby in the event that the contract is not executed and/or acceptable 100% Performance and Payment bonds are not delivered within time set forth.

Type of Organization:

\_\_\_\_\_  
(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

\_\_\_\_\_

Respectfully submitted,

\_\_\_\_\_  
Name of Bidder

ADDRESS:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Authorized Signature

# ADDENDUM NO. 1

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Project: Emergency Generator Improvements  
South City and Larry H. Miller Campuses  
Salt Lake Community College  
Salt Lake City, Utah

DFCM Project No. 05177670

Project Engineer: Thomas & Kolkman Engineering Co. Inc.  
64 West 1700 South  
Salt Lake City, Utah 84115  
Tele: (801) 484-8161 Fax: (801) 484-3538

Date: January 19, 2006

Number of Pages: 3 and the following attachments:

New Specification Sections, 33 Pages  
02813 - Lawn Sprinkler Piping  
02900 - Landscaping  
04810 - Unit Masonry Assemblies  
05500 - Metal Fabrications  
05501 - Stainless Steel Fabrications

One 8-1/2" x 11" Drawing: Revised Fixture Schedule.

Six 30" x 42" Drawings, Revision No. 1, Sheets E-103, E-104, E-105, E-106, E-401, and E-601.

One 30" x 42" Drawing, Sheet L1.1, New Drawing.

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Incorporate the following clarifications and revisions in the specifications, drawings, and other contract documents of the above named project.

Unless described otherwise, all labor and materials for the work described herein shall be in accordance with the requirements of the original contract documents.

This addendum becomes a part of the Contract Documents and the cost of all items herein shall be included in the Contractor's Bid.

Contractors are instructed to acknowledge receipt of this addendum on the appropriate place of the Bid Form.

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1. General Specification Clarification.

- A. Delete the words "DESIGN DEVELOPMENT SUBMITTAL" at the top of each page of the Specifications. Specifications included in the Project Manual are for use with the Contract Documents.

2. Clarify requirements for Sound Attenuated Housing for Generator at South City Campus:

- A. Provide generator set at South City Campus with Sound Attenuated Housing to meet the requirements for outdoor weather-protective housing in accordance with Specification Section 16620, Paragraph 2.6, G. and the following:
  - 1) Provide sound-attenuated housing insulated with non hydroscopic materials to reduce the sound level of the generator set while operating at full rated load to a maximum of 75 dBA at any location 7 meters from the generator set in a free field environment.
  - 2) Provide cooling air discharge with louvers or hood as required to discharge the air in an upward direction to minimize hot discharge air from recirculating in the block wall generator enclosure. Arrange louvers and/or hood to prevent accumulation of ice or snow and to maintain weather-protective integrity of the housing.

3. Add Ground Conductor.
  - A. Provide Equipment Ground Conductor, sized in accordance with NEC Table 250.122, and installed in accordance with Part VI of NEC Article 250, in all branch circuit raceways whether specifically noted on the drawings or not.
4. Add Limitations for Conductor Splicing:
  - A. Conductor splices will not be allowed in panelboard enclosures.
5. Add Demolition of Existing Emergency Lighting Battery Unit in LHM Campus Building 2.
  - A. Refer to Larry H. Miller Campus Building 2 Electrical Plan, Sheet E-102.
  - B. Existing Emergency Lighting Battery Unit shown in Lobby 100 at top of stairway does not exist.
  - C. Contractor to remove 2 existing Emergency Lighting Battery Units located on north and south walls of Lobby 100, approximately 8 feet east Grid 6.2, including all abandoned conduit, wiring, boxes, etc..
6. Modify Emergency Lighting in LHM Campus Buildings 3 and 4.
  - A. Modify emergency lighting circuits, add emergency light fixtures, etc., as indicated by Revision No. 1 on attached drawings E-103, E-104, E-105, E-106, E-401, and E-601.
7. Add Access Ladder at LHM Campus Building 4.
  - A. Add access ladder at LHM Campus Building Generator Enclosure as indicated by Revision No. 1 on attached drawing E-401.
8. Modify Fixture Schedule:
  - A. Delete Fixture Schedule on Sheet E-602.
  - B. Provide fixtures as specified on the attached Fixture Schedule. Fixture Schedule has been updated to include additional fixture type included on revised drawings.
9. Add Requirement for Conduit Support from Sound Insulated Ceilings:
  - A. Refer to Drawings, Sheet E-107. Ceiling of Mechanical Room N085 at South City Campus is insulated to prevent sound transmission to floor above.
  - B. Support new conduits with ceiling trapeze secured to structure by threaded rods through the existing sound insulation. Repair any damage to the sound insulation caused by installation of new conduit supports.
10. Add Waterproofing for Generator Pad Expansion Joint:
  - A. Refer to Generator Pad Section D6/E-603.
  - B. Provide flexible, self leveling, polyurethane sealant equal to Sikafelx 1C SL at expansion joint between generator pad and adjacent concrete slabs complete with suitable backer rod.
    - 1) Sealant shall conform to Federal Specification TT-S-00230C, Type I, Class A, and ASTM C-290, Type S, Grade P, Class 25.
    - 2) Sealant Manufacturer shall provide a written warranty against defects of the sealant materials for of period of five (5) years from the date of Substantial Completion.
  - C. Install joint sealant in accordance with the manufacturer's written installation instructions.
  - D. Provide submittal for the joint sealant.

11. See attached Drawing L1.1 for construction details of block wall generator enclosure at South City Campus.

END OF ADDENDUM NO. 1

## SECTION 02813 - LAWN SPRINKLER PIPING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. The Irrigation Plan is diagrammatic. All lines, heads and equipment are shown in approximate locations for purposes of graphic display and shall not be considered as exact locations. The drawings shall not be measured. If any discrepancies shall arise in the layout or installation of the irrigation system, the contractor shall consult with the Landscape Architect. Failure to consult with the Landscape Architect prior to the installation of the system may result in the removal, re-installation or changes to the system at the contractors expense.
- B. The contractor shall verify the existing water pressure at the point of connection. If the existing water pressure is less than 60 psi or greater than 90 psi, the contractor shall immediately notify the Landscape Architect before proceeding. If the existing water pressure is within the acceptable 60 - 90 psi, the contractor shall proceed with the installation of the system and a report of the existing water pressure shall be forwarded to the Landscape Architect.
- C. This Section includes verification of the existing water pressure at the point of connection, piping, valves, sprinklers, lawn sprinkler specialties, automatic controller, drip irrigation system, backflow preventer, electrical control wire conduit and electrical control wiring.
- D. In all instances the new trenches through the existing lawn areas are to receive NEW sod. Layout the piping configurations prior to the beginning of trenching operations. Use a sod cutting machine to remove the existing lawn and provide a smooth edge to receive the NEW sod pieces. All interfaces between the existing lawn and new sod pieces must be smooth and uniform in grade.
- E. Insure that all trenches have been thoroughly settled with water before installing NEW sod.
- F. All new pipes are to installed with a minimum of 12 inch separation between pipes, either horizontally or vertically.
- G. Insure that all trenches have been thoroughly settled with water before installing NEW sod.

#### 1.3 DEFINITIONS

- A. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.
- B. Pressure Piping: Downstream from point of connection to water distribution piping to and including control valves. Piping is under water distribution system pressure.
- C. The following are industry abbreviations for plastic materials:

1. PVC: Polyvinyl chloride plastic.

#### 1.4 SYSTEM PERFORMANCE REQUIREMENTS

- A. Minimum Water Coverage: 100 percent of turf and planting areas.
  1. 100 percent of turf and planting areas.
  2. All heads will be spaced uniformly.
  3. The spacing between heads shall not exceed the manufactures recommendations.
- B. Location of Sprinklers and Specialties:
  1. Design location is approximate. Make adjustments necessary to avoid buildings, retaining walls, fences, trees, signs and light standards.
  2. Spray Patterns: Adjust all nozzle spray patterns by changing nozzles or pattern types to eliminate throwing water directly onto buildings.
  3. Locate heads a minimum of 1 inch from sidewalks, curbs, mowstrips and all hardsurfaces.
  4. Heads located adjacent to buildings shall be a minimum of 6 inches from building walls.
- C. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid buildings, retaining walls, fences, trees, signs and light standards.
- D. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties, unless otherwise indicated:
  1. Pressure Piping: 200 psi
  2. Circuit Piping: 200 psi

#### 1.5 QUALITY ASSURANCE

- A. Product Options: Drawings indicate size, profiles, and dimensional requirements of lawn sprinkler piping components and are based on specific types and models indicated.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- C. Comply with NFPA 70, "National Electrical Code," for electrical connections between wiring and electrically operated devices.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Preparation for Transport: Prepare valves according to the following:
  1. Ensure that valves are dry and internally protected against rust and corrosion.
  2. Protect valves against damage to threaded ends and flange faces.
  3. Set valves in best position for handling. Set valves closed to prevent rattling.



- B. During Storage: Use precautions for valves according to the following:
  - 1. Do not remove end protectors unless necessary for inspection; then, reinstall for storage.
  - 2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off ground or pavement in watertight enclosures when outdoor storage is necessary.
- C. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- D. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.
- E. Protect flanges, fittings, and specialties from moisture and dirt.
- F. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

## 1.7 PROJECT CONDITIONS

- A. Research public utility records, and verify existing utility locations.
- B. Investigate and determine available water supply water pressure and flow characteristics.

## 1.8 SEQUENCING AND SCHEDULING

- A. Maintain uninterrupted water service to building during normal working hours. Arrange for temporary water shutoff with Owner.
- B. Arrange for water shut-off with Owner.
- C. Coordinate lawn sprinkler piping with utility work.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Bronze Ball Valves:
    - a. Apollo Ball Valves; Conbraco Industries, Inc.
    - b. Grinnell Corp.; Mueller Co.; Water Products Div.
  - 2. Bronze, Automatic Control Valves:
    - a. Rain Bird Sprinkler Mfg. Corp.
    - b. Toro Co., Irrigation Div.
  - 3. Plastic, Automatic Control Valves:
    - a. Rain Bird Sprinkler Mfg. Corp.
    - b. Toro Co., Irrigation Div.

4. Control-Valve Boxes:
  - a. AMETEK; Plymouth Products Div.
  - b. Carson-Brooks Plastics, Inc.
5. Sprinklers:
  - a. Rain Bird Sprinkler Mfg. Corp.

## 2.2 PIPES, TUBES AND CONDUITS

- A. 3" diameter and less PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedule 40 -solvent weld joints.
- B. PVC Pipe : Sch 40 (Grey) Conduit for Control Wires - Solvent Weld Joints.
- C. DRIP TUBE - Self-cleaning, Pressure-Compensating Dripper-line, Size to be ½" low density linear polyethylene tubing, housing internal pressure compensating, self-cleaning, integral drip emitters.
- D. Flex swing risers shall be THICK-WALLED POLY PIPE as manufactured by Rainbird. This pipe is to be used only on 15 to 25 foot diameter spray heads between heads and lateral lines and shall not exceed a distance of 5 feet.

## 2.3 PIPE FITTINGS

- A. PVC Socket Fittings for Circuit Piping, Schedule 40: ASTM D 2466.
- B. PVC Sch 40 Sweep Ells for Control Wires (GREY).
- C. Fittings on PRESSURE LINES shall be manufactured of ductile iron, Grade 65-45-12 in accordance with ASTM A-536. Fittings shall have deep bell push-on joints with gaskets meeting ASTM F-477. Fittings shall be HARCO DEEP BELL as manufactured by The Harrington Corporation of Lynchburg, VA. Transition gaskets are not allowed.
- D. Fittings on flex swing risers shall be barbed insert ells made of THICK-WALLED POLY PIPE as manufactured by Rainbird.
- E. DRIP TUBE - Self-cleaning, Pressure-Compensating Dripper-line
  1. The dripper line shall consist of nominal sized ½" low density linear polyethylene tubing, housing internal pressure compensating, self-cleaning, integral drip emitters. The emitters shall have the ability to independently regulate discharge rates, with an input pressure of 7 to 70 per square inch (PSI), at a constant flow and with a coefficient of variation (CV) of .03. The emitter discharge rate shall be either .61 gallons per hour (GPH) or .92 gallons per hour (GPH) utilizing a compensation cell mechanism and a diaphragm to maintain uniform discharge rates, The emitters shall continuously clean themselves while in operation.
- F. DRIP TUBE FITTINGS
  1. Techline 17mm (.57) Fittings. All Techline connections shall be made with approved Techline 17mm (.57) insert fittings.

## 2.4 VALVES AND VALVE SPECIALTIES

A. Electric remote control valves:

All electric remote control valves shall be of the size and type as specified on the Irrigation Legend.

B. Bronze Ball Valves: MSS SP-110, Class 150, 600-psi cold working pressure. Include bronze, two-piece construction body with regular port; chrome-plated brass ball; blowout-proof stem; PTFE seats and seals; threaded-end connections; and lever handle.

C. Control-Valve Boxes: PE, ABS, fiberglass, polymer concrete, or precast concrete box and cover, with open bottom, openings for piping, and designed for installing flush with grade. Include size as required for valves and service.

1. Drainage Backfill: Cleaned gravel or crushed stone, graded from 1 inch to 3/4 inch minimum.

## 2.5 SPRINKLERS

A. Description: Manufacturer's standard sprinklers designed for uniform coverage over entire spray area indicated, at available water pressure.

B. Components: Plastic housing and stainless steel and corrosion-resistant interior parts.

C. Pop-up, Spray Sprinklers: Fixed pattern, with screw-type flow adjustment and stainless-steel retraction spring.

D. Pop-up, Rotary, Spray Sprinklers: Gear drive, full-circle and adjustable part-circle types.

E. Pop-up, Rotary, Impact Sprinklers: Impact drive, full-circle and part-circle types.

## PART 3 - EXECUTION

### 3.1 PREPARATION

A. Set stakes to identify proposed lawn sprinkler locations. Obtain Architect's approval before excavation.

### 3.2 TRENCHING AND BACKFILLING

A. For excavating, trenching, and backfilling of trenches; All pipes shall be separated by 12 inches in either the vertical or horizontal direction. All trenches shall be dug a minimum of 14 inches deep and as wide as necessary to accommodate a 12 separation between all pipes. Material within 2 inches of any pipe shall be 1/4 inch minus, either existing material or imported as required.

B. Install piping and wiring in 4" PVC sleeves under sidewalks, roadways, parking lots.

C. Drain Pockets: Excavate to sizes indicated. Backfill with cleaned gravel or crushed stone, graded from 1 inch to 3/4 inch minimum, to 12 inches below grade. Cover gravel or crushed stone with sheet of asphalt-saturated felt and backfill remainder with excavated material.

- D. Provide 2 inch minimum cover over top of underground piping.

### 3.3 TRENCHING AND BACKFILLING - DRIP SYSTEM

- A. For excavating, trenching, and backfilling of trenches; Refer to details on drawings.
- B. Install piping with manufacturer recommended stakes.

### 3.4 PIPING APPLICATIONS

- A. Install components having pressure rating equal to or greater than system operating pressure.
- B. Piping in control-valve boxes and aboveground may be joined with flanges instead of joints indicated.
- C. Underground, Pressure Piping: Use the following:
  - 1. 3-Inch and Smaller: Schedule 40 PVC pipe with solvent-cemented joints.
  - 2. 4-Inch and Larger: Class 200: Pipe - ASTM D 2241; Rubber rings - ASTM F 447; Joint Design - ASTM D 3139, with the following cast-iron fittings:
    - a. Manufactured of ductile iron, Grade 65-45-12 in accordance with ASTM A-536. Fittings shall have deep bell push-on joints with gaskets meeting ASTM F-477. Fittings shall be HARCO DEEP BELL as manufactured by The Harrington Corporation of Lynchburg, VA. Transition gaskets are not allowed.
- D. Circuit Piping: Use the following:
  - 1. 2-Inch and Smaller: Schedule 40 PVC pipe, Schedule 40 PVC socket fittings, and solvent-cemented joints.
- E. Underground Branches and Offsets at Sprinklers and Devices: flexible swing joints.
- F. SLEEVES: 4" Schedule 40 PVC pipe, unless otherwise called for on the drawings; 4" Schedule 40 PVC socket fittings, and solvent-cemented joints.
- G. CONTROL WIRES:
  - 1. All control wires shall be installed in a 2" PVC Sch 40 conduit (grey), throughout the entire length of the control wire run from the farthest valve box to the controller.
    - a. Provide 6" diameter valve boxes @ a maximum distance of 300 feet in straight runs and at every 90 degree change of direction.
    - b. Use only "Sweep Ells" at directional changes.
    - c. Do not exceed 3 sweep ells without providing a 6" diameter pull-box.

### 3.5 VALVE APPLICATION

- 1. Underground, Shutoff-Duty Valves: Use the following:
- 2. 2-Inch and Smaller: Curb stop, with tee head, cast-iron curb-stop service box, and shutoff

rod.

3. Control Valves: Refer to Irrigation Legend on Drawings.

### 3.6 JOINT CONSTRUCTION

- A. The type of joints for pressure piping is dependent on the pipe sizes as herein specified. All joints must be allowed to set for a minimum of 24 hours prior to pressure testing.
- B. All Cast-Iron Joints on the mainline shall be fitted as per manufacturers recommendations, using both the proper "O-Ring" and pipe manipulation, as required and concrete thrust blcks.
- C. Fittings on flex swing risers shall be barbed insert ells made of THICK-WALLED POLY PIPE as manufactured by Rainbird

### 3.7 PIPING INSTALLATION

- A. Locations and Arrangements: Provide Coordination Drawings.
- B. Install piping at uniform slope of 0.5 percent minimum, down toward drain valves.
- C. Install piping free of sags and bends.
- D. Install groups of pipes parallel to each other with a 12 inch min. separation.
- E. Install fittings for changes in direction and branch connections.
- F. Install unions adjacent to valves and as per the detail on the drawings.
- G. Lay piping on solid subbase, uniformly sloped without humps or depressions.
- H. Install PVC piping in dry weather when temperature is above 40 deg F. Allow joints to cure at least 24 hours at temperature above 40 deg F before testing, unless otherwise recommended by manufacturer.

### 3.8 VALVE INSTALLATION

- A. Underground Gate Valves: Install in valve box.
- B. Underground Stop and Waste Valves: Install in cast iron curb box.
- C. Electric Remote Control Valves: Install a maximum of 2 valves in valve box
- D. Drain Valves: Install in 2" PVC sleeve with locking lid. Top of lid to be flush with finish grade.

### 3.9 SPRINKLER INSTALLATION

- A. Flush circuit piping with full head of water and install sprinklers after hydrostatic test is completed.
- B. Install lawn sprinklers perpendicular to finish grade.

- C. Install lawn sprinklers adjacent to hard-surfaces at ½ inch below finish grade.
- D. Locate all sprinklers to maintain a minimum distance of 2 inches from all boundaries and hard-surfaces.

### 3.10 CONNECTIONS

- A. Connect piping to valves, sprinklers, and specialties as per manufactures recommendations..
- B. Connect culinary water supply to lawn sprinkler piping with a backflow preventer as per codes.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- D. Ground all exterior mounted electric-powered controllers with a 3 rod grounding system, using ½ inch diameter x 8 foot copper rods and installed as per the manufactures recommendations.
  - 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
  - 2. Coordinate Electric-power connections to controllers as required.
  - 3. Coordinate all Electric-power to valves, and devices that require power.

### 3.11 FIELD QUALITY CONTROL

- A. Testing: Hydrostatically test piping and valves before backfilling trenches. Piping may be tested in sections.
  - 1. Cap and test piping with static water pressure of 150 psi.
  - 2. Repair leaks and defects with new materials and retest system or portion thereof until satisfactory results are obtained.

### 3.12 CLEANING AND ADJUSTING

- A. Flush dirt and debris from piping before installing sprinklers and other devices.
- B. Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit.
- C. Carefully adjust lawn sprinklers so they will be not more than ½ inch below finish grade.
- D. Adjust settings of controllers and automatic control valves.

### 3.13 COMMISSIONING

- A. Starting Procedures: Follow manufacturer's written procedures. If no procedures are prescribed by manufacturers, proceed as follows:
  - 1. Verify that specialty valves and their accessories are installed and operate correctly.
  - 2. Verify that specified tests of piping are complete.

3. Verify that sprinklers and devices are correct type.
4. Verify that damaged sprinklers and devices are replaced with new materials.
5. Verify that potable-water supply connections have backflow preventers.
6. Energize circuits to electrical equipment and devices.
7. Adjust operating controls.

#### 3.14 DEMONSTRATION

- A. Demonstrate to Landscape Architect and the Owner's maintenance personnel operation of equipment, sprinklers, specialties, and accessories. Review maintenance information.
- B. Provide seven days' advance written notice of demonstration.

#### 3.15 WINTERIZATION OF THE SYSTEM

- A. The entire irrigation system is designed to be winterized by attaching an air compressor to the quick coupler and "blow out" the pipes, valves and heads by the use of compressed air. DO NOT install automatic drains on the mainlines.
- B. If the system is installed during the fall season and the Certificate of Substantial Completion is not issued, the Contractor shall winterize the entire system and all other water lines that have been charged during the installation or testing period of the system. The system must then be charged in the springtime of the next year and inspected for any deficiencies. All repairs must be made by the contractor at no expense to the owner.

#### 3.16 CLOSEOUT

- A. RECORD DRAWINGS -
  1. As installation occurs, prepare accurate record drawing to be submitted before final inspection, including -
    - a. Detail and dimension changes made during construction.
    - b. Significant details and dimensions not shown in original Contract Documents.
    - c. Field dimensioned locations of valve boxes, manual drains, quick-coupler valves, control wire runs not in mainline ditch, and both ends of sleeves.
    - d. Take dimensions from permanent constructed surfaces or edges located at or above finish grade.
    - e. Take and record dimensions at time of installation.
    - f. Reduce copy of record drawing to half-size, color key circuits, and laminate both sides with 5 mil thick or heavier plastic. Install inside the controller cabinet.

B. OPERATIONS AND MAINTENANCE MANUAL DATA

- a. Provide INSTRUCTION MANUAL which lists complete instructions for system operation and maintenance, including winterizing.

END OF SECTION 02813



SECTION 02900 - LANDSCAPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

- 1. Shrubs
- 2. Plants
- 3. Sod
- 4. Topsoil
- 5. Soil amendments
- 6. Fertilizers
- 7. Bark Mulch

- B. RELATED WORK: The following requirements pertain to the protection of existing trees.

- 1. All existing trees remaining on site during the construction period shall be treated as follows:
- 2. Provide a watering basin at the base of each tree that is 10 feet in diameter and 12" deep. Use existing subgrade material to construct the watering basin. Water each tree weekly by completely filling the watering basin. Insure that the earth basin is not breeched and that the water is allowed to percolate naturally
- 3. Do not store material within the watering basin area.
- 4. Do not damage the branches or trunk in any way.
- 5. Do not prune the tree, unless permission is obtained from the Landscape Architect.
- 6. Each existing tree has in inherent value of \$5000.00. At the conclusion of the project, all existing trees will be inspected for damage and vitality. Any tree that is compromised in any way at this time will be analyzed and a fine will be determined or a replacement cost for the full amount will be assessed against the General Contractor.
- 7. Recommend protecting against soil compaction, contamination and grade change.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract.
- B. Product certificates signed by manufacturers certifying that their products comply with specified requirements.
  - 1. Manufacturer's certified analysis for standard products.
  - 2. Analysis for other materials by a recognized laboratory made according to methods

- established by the Association of Official Analytical Chemists, where applicable.
3. Label data substantiating that plants, trees, shrubs, and planting materials comply with specified requirements.
  4. Certification of identifying source, including name and telephone number of supplier.
- C. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses.
- D. Material test reports from qualified independent testing agency indicating and interpreting test results relative to compliance of the following materials with requirements indicated.
1. Analysis of imported topsoil.
- E. Maintenance instructions recommending procedures to be established by Owner for maintenance of landscaping during an entire year. Submit before expiration of required maintenance periods.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful landscape establishment.
1. Installer's Field Supervision: Installer to maintain an experienced full-time supervisor on the Project site during times that landscaping is in progress.
- B. Provide quality, size, genus, species, and variety of trees and shrubs indicated, complying with applicable requirements of ANSI Z60.1 "American Standard for Nursery Stock."
- C. Topsoil Analysis: (FOR IMPORTED TOPSOIL ONLY) Furnish a soil analysis made by a qualified independent soil-testing agency licenced in the State of Utah stating percentages of organic matter, inorganic matter (silt, clay, and sand), deleterious material, pH, and mineral and plant-nutrient content of topsoil.

SOIL NAME	pH	Soluble Salts mmhos/cm	SAR (sodium absorb. ratio)	% Organic Matter	% Sand	% Silt	% Clay	Texture Class
SOIL AMENDMENTS	<8.0	<4.0	NA	NA	NA	NA	NA	NA
TOPSOIL	5.5 To 8.0	<2.0	<3.0	>3.0	<70	-	<30	Sandy Loam; Loam; Sandy clay loam; Silt loam.

1. Report suitability of topsoil for growth of applicable planting material. State recommended quantities of nitrogen, phosphorus, and potash nutrients and any limestone, aluminum sulfate, or other soil amendments to be added to produce a satisfactory topsoil.
- D. Measurements for tree caliper: Measure trees and shrubs with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 12 inches above root flare for all sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. PACKAGED MATERIALS: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.
- B. SOD: Deliver on site only the amount that can be laid within 24 hours..
- C. TREES AND SHRUBS: Deliver freshly dug trees and shrubs.
  - 1. Do not prune before delivery, except as approved by Architect.
  - 2. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage.
  - 3. Do not bend or bind-tie trees or shrubs in such a manner as to destroy natural shape. Provide protective covering during delivery.
  - 4. Do not drop trees and shrubs during delivery.
  - 5. Handle balled and burlapped stock by the root ball.
- D. DELIVER trees, shrubs, ground covers, and plants after preparations for planting have been completed and install immediately. If planting is delayed more than 24 hours after delivery, all unplanted plants will be rejected, removed from the site and replaced with new stock. There will be no storage of plant material on site. NO EXCEPTIONS.
  - 1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
  - 2. Do not remove container-grown stock from containers before time of planting.
  - 3. Water root systems of trees and shrubs stored on site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.
- E. GRO-POWER STORAGE
  - 1. Mycorrhizal inoculum is living material and must be protected from extreme temperature. Avoid storage temperatures above 90° F or below 32° F. Keep it in a cool dry, well aerated location. Avoid exposure to direct sunlight for more than 2 hours.
  - 2. SHELF LIFE: For maximum effectiveness, use the contents of product within 12 month from date of purchase.

## 1.6 PROJECT CONDITIONS

- A. Utilities: Determine location of above grade and underground utilities and perform work in a manner which will avoid damage. Hand excavate, as required. Maintain grade stakes until removal is mutually agreed upon by parties concerned.
- B. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Architect before planting.

## 1.7 COORDINATION AND SCHEDULING

- A. Coordinate installation of planting materials during normal planting seasons for each type of plant material required.

## 1.8 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Warrant the following living planting materials for a period of one year after date of Substantial Completion, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, abnormal weather conditions unusual for warranty period, or incidents that are beyond Contractor's control.
  - 1. Shrubs
  - 2. Sod
- C. Remove and replace dead planting materials immediately unless required to plant in the succeeding planting season.
- D. Replace planting materials that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
- E. A limit of one replacement of each plant material will be required, except for losses or replacements due to failure to comply with requirements.

#### 1.9 TREE AND SHRUB AND GROUND COVER MAINTENANCE

- A. Maintain trees and shrubs by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease. Maintain trees and shrubs for the following period:
  - 1. Maintenance Period: 12 months following Substantial Completion.

#### 1.10 GROUND COVER AND PLANT MAINTENANCE

- A. Maintain ground cover and plants by watering, weeding, fertilizing, and other operations as required to establish healthy, viable plantings for the following period:
  - 1. Maintenance Period: 12 months following Substantial Completion.

#### 1.11 SOD MAINTENANCE

- A. ROLLING:
  - 1. All sodded areas must be rolled.
  - 2. Roller to be used shall be a water filled, smooth cylinder that when filled with a liquid must not weigh more than 300 pounds.
  - 3. Water content of soil must be adjusted such that rolling actually makes an impression in the sodded areas without causing ruts or depressions.
  - 4. Sodded areas must be rolled in two direction @ perpendicular angles.
- B. MOWING:
  - 1. Cut grass first time when it reaches a height of 4 ½" and maintain to minimum height of 3". Do not cut more than 1/3 of blade at any one mowing. Remove clippings. After first mowing, water to moisten soil from 3 inches to 5 inches deep. Allow a minimum of 5 days between mowings. Contractor shall mow the lawn until the end of the Date of Substantial Completion. The number of

mowings to be provided by the contractor shall be determined by the growth pattern of the lawn. There shall be no minimum number of mowings set forth, only that the health and vitality of the lawn shall be maintained. At no time shall the height of the lawn exceed 4 ½".

C. FERTILIZING:

1. 1. Fertilize all sodded areas 3 times @ 6 week intervals with the fertilizer herein specified. Notify the owner 72 hours in advance of each application. Three applications of fertilizer at the rate of 3 pounds per 1000 square feet is required prior to acceptance of the sodded areas.

D. Maintain and establish lawns by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Regrade, and re-sod all bare, eroded or dead sod areas to produce a uniformly smooth lawn.

D. Watering: Provide and maintain lawn-watering equipment to convey water from the source and to keep lawns uniformly moist. In the eventuality that the irrigation system is inoperable or that water in the irrigation system is not available, the contractor must apply water by whatever means necessary to establish the sod.

E. Mow lawns as soon as there is enough top growth to cut with mower set at 3" high. Repeat mowing as required to maintain specified height without cutting more than 40 percent of the grass height. Remove no more than 33 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet.

G. Apply weed killer as necessary to maintain weed-free lawn. Apply weed killer in accordance with manufacturer's instructions during calm weather when air temperature is between 50 and 80 deg

## PART 2 - PRODUCTS

### 2.1 TREE AND SHRUB MATERIAL

A. General: Furnish nursery-grown trees and shrubs as herein specified, conforming to ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully-branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

B. Grade: Provide trees and shrubs of sizes and grades for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. FERTILIZER

1. Commercial fertilizer shall be a mixed commercial fertilizer, O-F-241C, type 1, grade 16-16-8, level B with guaranteed chemical analysis of contents marked on the containers. Apply at a rate of 6 pounds per 1000 square feet.

### 2.2 DECIDUOUS SHRUBS

A. Form and Size: Deciduous shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 for type, shape, and height of shrub.

2.3 TOPSOIL (Use EXISTING topsoil that is stockpiled on site)

- A. Topsoil: Prepare the existing soil material by roto-tilling twice in opposite directions with specified soil amendment at the rates specified herein.

2.4 SOIL AMENDMENTS

A. GRO-POWER 5-3-1:

1. Organic materials consisting of higher plant life, composted beyond the fibrous stage, to humus (minimum 65%). Also shall have humic acids (minimum 25%) and beneficial soil bacteria strains. It shall NOT contain poultry, animal or human waste (i.e., sewage sludge), pathogenic viruses, fly larvae, insecticides, herbicides, fungicide or poisonous chemicals that would inhibit plant growth.
2. PHYSICAL PROPERTIES: A uniform "Beaded" homogenous mixture - 100.00% passing through a #4 mesh screen - a water soluble bio-degradable binder is used to insure fast breakdown.
3. CHEMICAL ANALYSIS: 5-3-1, Nitrogen (available) 5.00%, Phosphate 3.00%, Potash 1.00%,
4. GUARANTEED ANALYSIS:

Total Nitrogen (N)	5.00%
1.00% Ammoniacal Nitrogen	4.00% Urea Nitrogen
Humus	70.00%,
Humic Acids	15.00%.
Gro-Power bacterial "stimulator"	Included.
Available Phosphoric Acid (P2O5)	3.00%
Soluble Potash (K2O)	1.00%
Iron (Fe)	1.00%
Manganese(Mn)	0.05%
Zinc (Zn)	0.05%

Derived from ammonium phosphate, urea, sulphate of potash, compost and sulfides and oxides of iron, manganese and zinc.
5. ALSO CONTAINS NON-PLANT FOOD INGREDIENT:

Humic Acids (derived from compost)	15.00%
Bacteria (aerobic, anaerobic) Yeast & Mold (Min)	60,000 per 100 gram

2.5 MULCHES

- A. Organic Mulch: Organic mulch, free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of the following:
1. Type: Wood bark chips (medium coarse)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive landscaping for compliance with requirements and for conditions affecting performance of work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, and secure Architect's acceptance before the start of planting work. Make minor adjustments as may be required.

### 3.3 PLANTING SOIL PREPARATION

- A. Clean existing soil material of roots, plants, sods, stones and other extraneous materials harmful to plant growth prior to roto-tilling.
  - 1. Apply Gro-Power at the rate of 175 lbs. per 1000 sq. ft of area.
  - 2. Thoroughly roto-till amendments into existing soil material to a minimum depth of 6 inches. Roto-till two directions.
  - 3. Landscape Architect must approve roto-tilling of existing soil material prior to fine grading.

- B. PREPARATION OF FINISH GRADE

- 1. Inspect finish grade for any deleterious material larger than 1/2" in diameter. Bring to the attention of the Landscape Architect any deficiencies in the subgrade including low spots, unevenness, and poor drainage areas due to improper grading or leveling. Finish grade shall be 1-1/2" below any hard surface. NO EXCEPTIONS.
  - 2. After landscape areas have been prepared, take no heavy objects over them except lawn rollers. Immediately before planting lawn and with top soil in semi-dry condition, roll lawn planting areas in two directions at approximately right angles with water ballast roller weighing 100 to 300 lbs according to soil type. Rake or scarify and cut or fill irregularities that develop as required until area is true and uniform, free from lumps, depressions, and irregularities.

### 3.4 EXCAVATION FOR TREES AND SHRUBS

- 1. Balled and Burlapped Trees and Shrubs: refer to detail on drawings.
  - 2. Container-Grown Shrubs: Refer to detail on drawings.
- A. Dispose of subsoil removed from landscape excavations. Do not mix with planting soil or use as backfill.
- B. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
- C. Fill excavations with water and allow to percolate out, before placing setting layer and positioning trees and shrubs.

### 3.5 PLANTING TREES AND SHRUBS

- A. Set balled and burlapped stock plumb and in center of pit or trench with top of ball raised above adjacent finish grades as indicated.
  - 1. Place stock on setting layer of compacted planting soil.

2. Remove all burlap and wire baskets from tree balls. Remove pallets, if any, before setting. Do not use planting stock if ball is cracked or broken before or during planting operation.
  3. Place backfill around ball in layers, tamping to settle backfill and eliminate voids and air pockets. When pit is approximately 1/2 backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing and tamping final layer of backfill.
- B. Set container-grown stock plumb and in center of pit or trench with top of ball raised above adjacent finish grades as indicated.
1. Carefully remove containers so as not to damage root balls.
  2. Place stock on setting layer of compacted planting soil.
  3. Place backfill around ball in layers, tamping to settle backfill and eliminate voids and air pockets. When pit is approximately 1/2 backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing and tamping final layer of backfill.
- C. Dish and tamp top of backfill to form a 3-inch- (75-mm-) high mound around the rim of the pit. Do not cover top of root ball with backfill.

### 3.6 TREE AND SHRUB PRUNING

- A. Prune, thin, and shape trees and shrubs as directed by Architect.

### 3.7 TREE AND SHRUB PRUNING

- A. Prune, thin, and shape trees and shrubs as directed by Architect.

### 3.8 PLANTING GROUND COVER AND PLANTS

- A. Space ground cover and plants as indicated.

### 3.9 MULCHING

- A. Mulch backfilled surfaces of pits, trenches, planted areas, and other areas with a 3" layer of mulch.

### 3.10 CLEANUP AND PROTECTION

- A. During landscaping, keep pavements clean and work area in an orderly condition.
- B. Protect landscaping from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.

### 3.11 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION 02900



SECTION 04810 - UNIT MASONRY ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
  - 1. Concrete masonry units (CMUs).
  - 2. Mortar and grout.
  - 3. Reinforcing steel.
  - 6. Miscellaneous masonry accessories.

1.3 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
  - 1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
- C. Samples for Verification: For each type and color of the following:
  - 1. Exposed concrete masonry units.
  - 2. Special brick shapes.
  - 3. Plaster Finish to match Existing foundation Wall.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.
- D. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation

of dirt and oil.

## 1.7 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
- B. Do not apply uniform floor loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
  - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
  - 2. Protect sills, ledges, and projections from mortar droppings.
  - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
  - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

## PART2 PRODUCTS

### 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
  - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

### 2.2 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

### 2.3 CONCRETE MASONRY UNITS (CMUs)

- A. Shapes: Provide shapes indicated and as follows:
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
  - 2. Provide square-edged units for outside corners, unless otherwise indicated.

- B. Concrete Masonry Units: ASTM C 90.
  - 1. Weight Classification: Normal weight as indicated.
  - 2. Exposed Faces: Provide color and texture matching the existing restroom.
  - 3. Product: Split and honed faced integrally colored CMU: as selected by Architect.

## 2.4 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.
- C. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.
  - 1. Available Products:
    - a. Bayer Corporation, Industrial Chemicals Div.; Bayferrox Iron Oxide Pigments.
    - b. Davis Colors; True Tone Mortar Colors.
    - c. Solomon Grind-Chem Services, Inc.; SGS Mortar Colors.
- E. Aggregate for Mortar: ASTM C 144.
  - A. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
  - B. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
- F. Aggregate for Grout: ASTM C 404.
- G. Water: Potable.
- H. Plaster finish: Match existing foundation wall in color and grouting pattern.

## 2.5 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

## 2.6 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with subparagraphs below, unless otherwise indicated.
  - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
  - 2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304.
  - 3. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, hot-dip galvanized after fabrication to comply with ASTM A 153/A 153M.
- B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches parallel to face of veneer.

## 2.7 MISCELLANEOUS ANCHORS

- A. Anchor Bolts: Headed or L-shaped steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.

## 2.8 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for

removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. Available Manufacturers:
  - a. Diedrich Technologies, Inc.
  - b. EaCo Chem, Inc.
  - c. ProSoCo, Inc.

## 2.9 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
  1. Do not use calcium chloride in mortar or grout.
  2. Limit cementitious materials in mortar to portland cement and lime.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- A. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
  1. For masonry below grade or in contact with earth, use Type S.
  2. For reinforced masonry, use Type N.
  3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
- D. Grout for Unit Masonry: Comply with ASTM C 476.
  1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
  2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
  1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
  2. Verify that foundations are within tolerances specified.
  3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous

- pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- D. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
1. Mix units from several pallets or cubes as they are placed.
- F. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
  2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
  3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
  4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed joint thickness of adjacent courses by more than 1/8 inch.
  5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed joint and head joint thicknesses by more than 1/8 inch.
  6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.
  7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

### 3.3 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- H. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- II. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.

- a. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c., unless otherwise indicated.
2. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 7 Section "Fire-Resistive Joint Systems."

### 3.4 MORTAR BEDDING AND JOINTING

- A. Lay hollow concrete masonry units as follows:
  1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
  2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
  3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
  4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

### 3.5 CONTROL AND EXPANSION JOINTS

- B. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:
  1. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
- C. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 7 Section "Joint Sealants," but not less than 3/8 inch.
  1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

### 3.7 REINFORCED UNIT MASONRY INSTALLATION

- A. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- B. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
  1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
  2. Limit height of vertical grout pours to not more than 60 inches.

### 3.8 FIELD QUALITY CONTROL

- A. Inspectors: Owner will engage qualified independent inspectors to perform inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.
  1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.

3.9 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
  - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
  - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
  - 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
  - 6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
  - 7. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.10 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
  - 1. Crush masonry waste to less than 4 inches in each dimension.
  - 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 2 Section "Earthwork." 3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, and Division 1 Specification Sections apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Furnish and install access ladder with platform fabricated of galvanized steel complete with accessories and miscellaneous materials required for a complete installation as shown on the drawings.

1.3 QUALITY ASSURANCE

- A. Provide all work in accordance with the following codes and standards.
  - 1. ASTM A36 - Structural Steel.
  - 2. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.
  - 3. ASTM A123 - Zinc Coatings on Products Fabricated From Rolled, Pressed and Forged Steel Shapes, Plates, Bars, and Strip.
  - 4. ASTM A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 5. ASTM A363 - Steel Plates, Shapes, and Bars.
  - 6. ASTM A307 - Carbon Steel Externally Threaded Standard Fasteners.
  - 7. ASTM A569 - Steel Bar Grating
  - 8. ASTM A53 - Steel Pipe
  - 9. AWS A2.0 - Standard Welding Symbols.
  - 10. AWS D1.1-88 - Structural Welding Code.

1.4 SUBMITTALS

- A. Submit product data for welded steel bar grating.
- B. Submit shop drawings showing details of fabrication, assembly and installation including templates for anchor bolt placement after field measurements have been taken. Do not delay job progress.
  - 1. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld lengths.

1.5 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on Drawings.



## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. All materials shall be as specified in the following standards below:
1. Steel Sections: ASTM A36. (Channels, angles, etc.)
  2. Plates: ASTM A36.
  3. Pipe: ASTM A53, Schedule 40.
  4. Fasteners: as noted on drawings.
  5. Bolts, Nuts, and Washers: ASTM A325.
  6. Welding Materials: AWS D1.1-88; type required for materials being welded.
- B. Galvanizing: Provide a zinc coating for those items shown or specified to be galvanized, as follows:
1. ASTM A153 for galvanizing iron and steel hardware.
  2. ASTM A123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip 1/8" thick and heavier.
  3. ASTM A386 for galvanizing assembled steel products.
- C. For work exposed to view use materials selected for their smoothness and freedom from surface blemishes.

### 2.2 FABRICATION

- A. All materials are to be fabricated, erected and installed by trained personnel and as outlined below:
1. Fit and shop assemble in largest practical sections, for delivery to site.
  2. Fabricate items with joints tightly fitted and secured.
  3. Continuously seal joined members by continuous welds.
  4. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
  5. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
  6. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

### 2.3 FINISHES

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Galvanize steel members in accordance with ASTM A123. Provide minimum 1.25 oz/sq ft galvanized coating.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. **Field measure all work prior to fabrication.** Beginning of fabrication means erector accepts existing conditions.

### 3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.

### 3.3 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Obtain Project Engineer approval prior to site cutting or making adjustments not scheduled.

### 3.4 MISCELLANEOUS METAL FABRICATIONS

- A. Drill mounting plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.
- B. Miscellaneous framing and supports:
  - 1. Provide miscellaneous steel framing and supports not detailed on the drawings, as required to complete work.
  - 2. Fabricate miscellaneous units to sizes, shapes and profiles shown or, if not shown, of dimensions required for installation. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.

### 3.5 INSTALLATION GENERAL

- A. Fastening to in-place construction
  - 1. Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.
- B. Cutting, Fitting and Placement
  - 1. Perform cutting, drilling and fitting required for installation of metal fabrications.
  - 2. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.
- C. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dipped galvanized after fabrication, and are intended for bolted or screwed field connections.

D. Field Welding

1. Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.

3.6 ADJUST AND CLEAN

- A. For galvanized surfaces: Clean field welds, bolted connections and abraded areas and apply 2 coats of galvanizing repair paint.

\* END OF SECTION 0550 \*

SECTION 05501 - STAINLESS STEEL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, and Division 1 Specification Sections apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Furnish and install access ladder with platform fabricated of galvanized steel complete with accessories and miscellaneous materials required for a complete installation as shown on the drawings.

1.3 QUALITY ASSURANCE

- A. Provide all work in accordance with the following codes and standards.
  - 1. ASTM A276 - Stainless Steel hot/cold-finished bars

1.4 SUBMITTALS

- A. Submit product data for stainless steel tubes & sheets.
- B. Submit product data for stainless steel hinges.
- C. Submit product data for stainless steel latch.
- D. Submit shop drawings showing details of fabrication, assembly and installation. Do not delay job progress.
  - 1. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld lengths.

1.5 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All materials shall be as specified in the following standards below:
  - 1. Stainless Steel Sections: ASTM A36. (Channels, angles, etc.)
  - 2. Stainless Steel Plates: ASTM A36.

2.2 FABRICATION

- A. All materials are to be fabricated, erected and installed by trained personnel and as outlined below:
  - 1. Fit and shop assemble in largest practical sections, for delivery to site.
  - 2. Fabricate items with joints tightly fitted and secured.
  - 3. Continuously seal joined members by continuous welds.

4. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
5. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
6. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

## 2.3 FINISHES

- A. Mill Finish

## PART 3 - EXECUTION

### 3.4 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. **Field measure all work prior to fabrication.** Beginning of fabrication means erector accepts existing conditions.

### 3.5 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.

### 3.6 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Obtain Project Engineer approval prior to site cutting or making adjustments not scheduled.

### 3.7 MISCELLANEOUS METAL FABRICATIONS

- A. Fabricate miscellaneous units to sizes, shapes and profiles shown or, if not shown, of dimensions required for installation. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.

### 3.8 INSTALLATION GENERAL

- A. Fastening to in-place construction
  1. Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.
- B. Cutting, Fitting and Placement
  1. Perform cutting, drilling and fitting required for installation of metal fabrications.
  2. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack,

measured from established lines and levels.

C. Field Welding

1. Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.

3.9 ADJUST AND CLEAN

- A. Clean field welds, bolted connections and abraded areas and apply 2 coats of galvanizing repair paint.

\* END OF SECTION 0550 \*

# FIXTURE SCHEDULE

SYMBOL	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	LAMP
F-1	EXITRONIX LIGHTOLIER LITHONIA MCPHILBEN PRESCOLITE SURE-LITES	G400-LB-WW LD-A-1-G-W LE-S-W-1-G-120/277 30VL-1-W-G DMX1GAW CX-6-1-G-W	UNIVERSAL MOUNTED, SINGLE FACE, LIGHT EMITTING DIODE (LED) EXIT LIGHT WITH DIE CAST ALUMINUM HOUSING, WHITE FINISH, GREEN LETTERS ON STENCIL FACE, UNIVERSAL KNOCKOUT CHEVRON ARROWS AND 120/277 DUAL VOLTAGE INPUT.	FURNISHED W/ FIXTURE
F-2	EXITRONIX LIGHTOLIER LITHONIA MCPHILBEN PRESCOLITE SURE-LITES	G400U-LB-WW LD-A-2-G-W LE-S-W-2-G-120/277 30VL-2-W-G DMX2GAW CX-6-2-G-W	SAME AS F-2 EXCEPT DOUBLE FACED	FURNISHED W/ FIXTURE
F-3	EXITRONIX LIGHTOLIER LITHONIA MCPHILBEN PRESCOLITE SURE-LITES	G402-LB-WW-E2-E12 LD-A-1-G-W/CXPKITW-36 LE-S-W-1-G-120/277/ELA-SS36 55L-1-12/27-W-G/55LPKIT36W DMX1GAW-PMCW36 CX-6-1-G-W/CAX36PKWH	SAME AS F-1 EXCEPT PENDANT MOUNTED WITH 36" STEM	FURNISHED W/ FIXTURE
F-4	INFINITY LIGHTOLIER OMEGA PORTFOLIO PRESCOLITE	PHC11/75-232-EB-CS-UNV-WH CS8242H-UCL DM8-2H-32PLT-SC-CSSFF-U C19232-E-P-9250-LI CFS932EB-CR-WH	SURFACE MOUNTED COMPACT FLUORESCENT DOWNLIGHT WITH ALUMINUM HOUSING, CLEAR SEMI-SPECULAR REFLECTOR, WHITE FINISH, AND 120/277 VOLT <10% THD ELECTRONIC BALLAST.	2CFM32W/35K
F-5	CAPRI DMF LIGHTING LIGHTOLIER PORTFOLIO PRESCOLITE	CM8-F126/32/42-U-H86 DHFH8-1321-D806SW 8037WH-7132BU C7132-E-7150-W LF8CFH132EB-8CFH1-W	RECESSED COMPACT FLOURESCENT DOWNLIGHT WITH WHITE REFLECTOR, NOMINAL 8" DIAMETER APERTURE AND 120/277 VOLT <10% THD ELECTRONIC BALLAST.	1CFM32W/35K
F-6	CAPRI DMF LIGHTING LIGHTOLIER	CM6R-F126/32/42-U-H65 DHFH6R-132-D6061 8031CCL-S6132U-RM	RECESSED COMPACT FLOURESCENT DOWNLIGHT WITH REMODEL HOUSING, SPECULAR CLEAR LOW IRRIDESCENT ALZAK REFLECTOR, NOMINAL 6" DIAMETER APERTURE AND 120/277 UNIVERSAL VOLTAGE <10% THD ELECTRONIC BALLAST.	1CFM32W/35K
F-7	DEVINE LBL LIGHTING LURALINE PRISMA TERON	BCD17-PLT42-ELB-UNV-WHT 5207CHE-UNV BCG1-42TE-WH 071181 BEDC14XE-TW	WALL MOUNTED COMPACT FLUORESCENT FIXTURE WITH CAST ALUMINUM HOUSING, WHITE FINISH, FROSTED GLASS DIFFUSER, GUARD, AND 120/277 UNIVERSAL VOLTAGE <10%THD ELECTRONIC BALLAST.	1CFM42W/35K
F-8	CAPRI DMF LIGHTING LIGHTOLIER PORTFOLIO PRESCOLITE	CM8-F126/32/42-U-H86 DHFH8-1421-D806SW 8037WH-7142BU C7142-E-7150-W LF8CFH132EB-8CFH1-W	RECESSED COMPACT FLOURESCENT DOWNLIGHT WITH WHITE REFLECTOR, NOMINAL 8" DIAMETER APERTURE AND 120/277 VOLT <10% THD ELECTRONIC BALLAST.	1CFM42W/35K